

VIII. NEW DUCHESNE RIVER RODENTS AND A
PRELIMINARY SURVEY OF THE ADJIDAUMIDÆ

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The two species of Duchesne River rodents described in this paper were discovered by Carnegie Museum field parties working in the Uinta Basin, Utah, in 1931 and 1932. At the base of the Duchesne River Oligocene Series in the Randlett Horizon, the *Paramyidæ* are represented by a new species, *Leptotomus kayi* n. sp., which approaches related forms found in the underlying Uinta Eocene Series. This was the most complete rodent specimen discovered in this horizon, but scattered teeth recovered in the same beds show that species of the *Sciuravus* and *Tillomys* type persisted to the base of the Duchesne River Oligocene.

In the uppermost horizon of the Duchesne River Oligocene Series, the Lapoint, but one rodent was found. The latter, however, appears to give all that might be desired in the way of an ancestor for the interesting Sciuromorph genus *Adjidaumo*; the family *Adjidaumidæ* has hitherto been known only from higher Oligocene horizons. The specimen, described herein as a new genus and species, *Protadjidaumo typus* n. sp., adds to the Oligocene components of the Duchesne River fauna.

The illustrations in this paper are from drawings by Mr. Sydney Prentice.

Order **SIMPLICIDENTATA** Lilljeborg
Family **PARAMYIDÆ** Miller and Gidley
Genus **LEPTOTOMUS**¹ Matthew
Leptotomus kayi sp. nov.

Holotype: Fragmentary left maxillary with P⁴, M¹, M² and M³ in place, Carnegie Museum Cat. Vert. Foss., No. 11930.

¹Matthew proposed *Leptotomus* as a subgenus of *Paramys* in 1910 ("On the Osteology and Relationships of *Paramys*, and the Affinities of the *Ischyromyidæ*," Bull. Amer. Mus. Nat. Hist., Vol. 28, Art. VI, p. 50). I believe this group of the *Paramyidæ* should be raised to full generic status, however, along with *Ischyrotomus*.

Horizon: Duchesne River Oligocene Series, Randlett Horizon, near contact with Myton Member² (Horizon C of Peterson), Uinta Eocene Series.

Locality: Two miles northeast of Randlett Point, Uinta County, Utah.

Diagnosis: Cheek teeth brachyodont, the pattern recalling that of *Prosciurus*; low intermediate tubercles on protoloph and metalophs of P⁴, M¹ and M², the metaconules more prominent than the protoconules; external intermediate cuspules on P⁴ and the molars; molars with prominent anterior but much reduced posterior cingula and slight internal enamel invaginations. Low posterior transverse crest in M³. P⁴ molariform, its anterior cingulum more reduced than that of molars, the posterior cingulum prominent, the metacone and metaconule nearly equal in size. Species larger than *Leptomomus grangeri* Matthew.

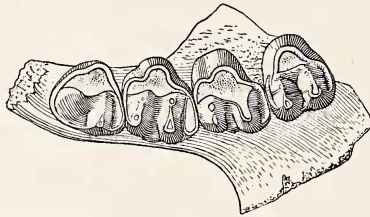


FIG. 1. *Leptomomus kayi* Burke, holotype, C. M. No. 11930, maxillary with P⁴-M³ left, X2.

Anterior to P⁴ the maxillary is shattered and P³ is not preserved. P⁴ is almost as large as the molars, is not prolonged forward, and has a well-developed anterior cingulum. Its anterior cross-valley is not as wide as the corresponding cross-valleys in the molars, and the posterior cingulum is low. P⁴ bears a very small cuspule between the external cusps.

In the molars the anterior cingula are well-developed. The posterior cingula were much reduced. In M¹ the external intermediate cuspule is prominent. A slight enamel invagination occurs in the internal face of this molar. M² is badly worn in the region of the protoloph, but the presence of a low protoconule is still indicated. The external intermediate cuspule is somewhat larger than the corresponding cuspule in M¹, and an enamel invagination in the postero-internal wall of the

²The term "Myton Member" has been proposed for the Upper Uinta, C of Peterson, by Horace Elmer Wood 2nd ("Revision of the Hyrachyidae," Bull. Amer. Mus. Nat. Hist., Vol. LXVII, Art. V, p. 242, 1934). In this paper Wood also proposes the term "Wagonhound Member" for the Lower Uinta, A+B of Peterson.

tooth is a little shallower than the invagination seen in M¹. M³ bears a complete anterior transverse crest. The posterior basin has been badly worn, but a short crest runs internally from what appears to be a low external intermediate cuspule, and there are indications of a low posterior transverse crest.

The zygoma is heavy and sturdy, and begins to flare out laterally posterior to M¹. Anteriorly it extends obliquely upward and forward.

This species agrees best with a smaller form, probably a distinct species, which is found in the Myton Member of the Uinta Eocene Series, the lower jaw of which resembles that found in *Leptotomus grangeri* Matthew. P⁴ was the only superior cheek-tooth found with the type of *Leptotomus grangeri* Matthew. From it, P⁴ of both *Leptotomus kayi* m. and the Myton Member species differ in being more molariform, the trigonal outline seen in P⁴ of *Leptotomus grangeri* Matthew is less evident, and the anterior cingulum is more reduced. In *Leptotomus kayi* m. the metacone and metaconule appear to be nearer the same size than in *Leptotomus grangeri* Matthew, and the Duchesne River Oligocene species exceeds both *Leptotomus grangeri* Matthew and the species from the Myton Member in size.

MEASUREMENTS

	mm.
P ⁴ antero-posterior.....	4.8
P ⁴ transverse.....	5.4
M ¹ antero-posterior.....	4.8
M ¹ transverse.....	5.7
M ² antero-posterior.....	4.9
M ² transverse.....	5.0
M ³ antero-posterior.....	5.1
M ³ transverse.....	5.0

Family ADJIDAUMIDÆ Miller and Gidley

The discovery of *Protadjidaumo typus* m. in the Duchesne River Oligocene Series by the Carnegie Museum field party of 1932 necessitated a comparison of the latter species with later Oligocene *Adjidaumidæ* which have been included by various writers in the past in the genus *Adjidaumo*. After a study of material in the collections of the Carnegie Museum, the writer was enabled, though the generosity of Dr. Walter Granger, Curator of Fossil Mammals at the American Museum of Natural History, to borrow and study type material at the latter institution, and has recently, through the kindness of Mr. Albert E. Wood, secured the loan of some excellent specimens from

the latter's private collection. It is planned to embody the results of the study of this material in a later paper dealing more fully with the family *Adjidaumidae*, and the following descriptions are to be considered as preliminary to a fuller treatment of the material.

Genus *PROTADJIDAUMO* gen. nov.

Genotype: *Protadjidaumo typus* sp. nov.

Holotype: Fragment of left ramus of mandible with P_4 , M_1 and M_2 , Carnegie Museum Cat. Vert. Foss., No. 11931.

Horizon: Duchesne River Oligocene Series, Lapoint Horizon.

Locality: Fourteen miles west of Vernal, Uinta County, Utah, one-half mile north of Vernal-Lapoint road.

Diagnosis: Pattern of cheek-teeth essentially as in *Adjidaumo*, but cusps more bunoid and connecting crests weaker, P_4 with low posterior cingulum connecting with hypolophid, anterior valley of M_1 opening freely externally.



FIG. 2. *Protadjidaumo typus* Burke, holotype, C. M. No. 11931, P_4 - M_1 left, $\times 10$.

If not directly ancestral to the genus *Adjidaumo* in later Oligocene horizons, *Protadjidaumo* is certainly closely related to the latter genus. By converting the posterior cingulum of P_4 into a cingulum crest (a process which appears to be under way already), developing a dam near the external exit of the anterior valley of M_1 , raising and strengthening its connecting crests and attaining a more crescentic condition of its outer cusps, *Protadjidaumo typus* might easily give rise to a conservative species of *Adjidaumo* such as *Adjidaumo minutus* (Cope). On the other hand, *Protadjidaumo* appears to have progressed too far in the direction of *Adjidaumo* to have led up to the species included in the proposed new genus *Paradjidaumo*, which is described later in this paper.

MEASUREMENTS

	mm.
P_4 antero-posterior.....	1.1
P_4 transverse.....	1.0
M_1 antero-posterior.....	1.1
M_1 transverse.....	1.1
M_2 antero-posterior.....	1.2
M_2 transverse.....	1.1

Genus *Adjidaumo* Hay*Adjidaumo douglassi* sp. nov.

Holotype: Fragment of right ramus of mandible with M_{1-3} in place, Carnegie Museum Cat. Vert. Foss., No. 1957.

Horizon: Upper Oligocene.³

Locality: White Butte, North Dakota.

Diagnosis: A little larger than *Adjidaumo minimus* (Matthew) and smaller than *Adjidaumo minutus* (Cope); inferior molars with crescentic external cusps, steep outer walls, crowded anterior valleys, deep central basins, and reduced anterior cingula; posterior valley wide on M_1 and on M_2 , merely indicated on M_3 , median transverse crest of M_3 joined with entoconid, forming fossette internal to hypoconid, crest from entoconid in M_{1-2} oblique and joined with postero-external wall postero-internal to hypoconid.



FIG. 3. *Adjidaumo douglassi* Burke, holotype, C. M. No. 1957, M_{1-3} right, $\times 10$.

In size this species approaches *Adjidaumo minimus* (Matthew) but shows considerable advance over the latter and a somewhat lesser advance over *Adjidaumo minutus* (Cope) in the more crescentic condition of its external cusps, in having higher and more oblique connecting crests, and deeper central basins which are tending to become fossettes. In *Adjidaumo minimus* (Matthew) the posterior valleys of M_1 and M_2 are relatively narrow and the posterior cingulum crests weak, while the opposite condition holds in *Adjidaumo douglassi* m.

³This specimen was collected by Earl Douglass on Nov. 23, 1905. Douglass' field labels give the following data regarding the horizon and the locality from which it was taken:

Horizon: "White River, above nodular Oreodon Bed, in gray-greenish sand above hard green sandstone containing *Aceratherium tridactylum*, *Mesohippus*, etc."

Locality: "White Butte, 50 mi. S.W. of Dickinson, N. Dakota near Sand Creek."

The "gray-greenish sand" mentioned above is No. 6 of Douglass' White Butte section in "A Geological Reconnaissance in North Dakota, Montana and Idaho," Ann. Car. Mus., Vol. V., No. VIII, pp. 284-285, 1909.

MEASUREMENTS		mm.
M ₁ antero-posterior.....		1.1
M ₁ transverse.....		0.9
M ₂ antero-posterior.....		1.0
M ₂ transverse.....		1.1
M ₃ antero-posterior.....		0.9
M ₃ transverse.....		0.9
Length of molar series.....		2.5

Genus **PARADJIDAUMO** gen. nov.

Genotype: **Paradjidaumo minor** (Douglass).

Eumys minor Douglass, Trans. Amer. Philos. Soc., N. S., Vol. XX, 1901, p. 252.

Gymnoptychus minor Matthew, Bull. Amer. Mus. Nat. Hist., Vol. II, 1903, p. 215.

Holotype: A right lower jaw with P₄ and M₁ in place, Carnegie Museum Cat. Vert. Foss. No. 735.

Horizon of the holotype: Titanotherium Beds, Lower Oligocene.

Locality of the holotype: Pipestone Creek, Jefferson County, Montana.

Referred Species: **Paradjidaumo nasutus** (Cope).

Gymnoptychus nasutus Cope (in part), Pal. Bull. 16, 1873, p. 6 (The lower jaw first described, not the skull).⁴

Gymnoptychus trilophus Cope, Pal. Bull. 16, 1873, p. 6.⁵

⁴In the protograph, after describing the lower jaw, Cope wrote of this skull, "The anterior part of a cranium *probably* belongs to the same species." (Italics mine). In the table of measurements, the measurements of the skull are preceded by those of the lower jaw. In 1874 (Ann. Rpt. U. S. Geol. and Geog. Surv. Terr., p. 476) both the lower jaw (Am. Mus. 5401) and the portion of a skull (Am. Mus. 5367) are included under *G. trilophus*. But in 1884 (Vert. of the Tert. Form. of the West, explanation of fig. 21, Pl. LXV, Cope makes the statement that this was the skull "upon which the species *G. nasutus* was established." In this paper of Cope's, the skull was rather doubtfully placed under *G. minutus*. While I am not sure that this specific reference is correct, I do not hesitate to refer the specimen to *Adjidaumo*.

⁵In this paper, despite the fact that the species *nasutus* had page priority in the first description, Cope relegated it to the synonymy of *trilophus* without giving any reason for his action. I am convinced that Cope's procedure in this and subsequent descriptions contributed to a confusion of types and beclouded the true relationships of the various species described under *Gymnoptychus* in Pal. Bull. 16, and feel that further acquiescence to this disposition of the species would only lead to a more involved taxonomic snarl.

Gymnoptychus trilophus Cope (in part), Ann. Rpt. U. S. Geol. and Geog. Surv. Terr., 1874, p. 476 (Not the skull).

Gymnoptychus trilophus Cope, American Naturalist, Vol. XVII, 1883, p. 51, fig. 5e.

Gymnoptychus trilophus Cope, Vert. of the Tert. Form. of the West, Book I, 1884, p. 826, pl. LXV, figs. 31-34.

Adjidaumo trilophus Hay, Science, N. S. 10, Vol. 33, No. 243, 1889, p. 253.

Gymnoptychus liolophus Matthew, Bull. Amer. Mus. Nat. Hist., Vol. II, 1903, p. 215.

Holotype: A lower jaw with DP₄, M₁ and M₂ in place, American Museum of Natural History No. 5401.⁶

Horizon of the holotype: Oreodon Beds, Middle Oligocene.

Locality of the holotype: Cedar Creek, Logan County, Colorado.

Generic diagnosis: P₁¹ M₃³. Cheek-teeth more hypsodont and progressively more lophodont than in *Adjidaumo*; pattern of unworn cheek-teeth resembling that of *Adjidaumo*, but somewhat simpler, anterior and posterior valleys shallow and narrow. Cingula, excepting anterior cingula of P₄⁴ elevated into marginal crests; antero-external ridge lacking from inferior molars; "*Adjidaumo*" pattern evanescent, moderate wear reduces superior surface of crown to characteristic omega-like design of three transverse lophs.



FIG. 4. *Paradjidaumo minor* (Douglass), holotype, C. M. No. 735, P₄ and M₁ right, $\times 10$.

The family *Adjidaumidae*, as now known, appears to be divisible into two major groups of species. The first of these groups consists of species with brachyodont cheek-teeth which retain the antero-external ridge on the inferior molars and have relatively deep anterior and posterior valleys. This division includes *Protadjidaumo typus* m.,

⁶This lower jaw has been regarded as the type of *Gymnoptychus trilophus* Cope, probably due to the fact that its measurements occur first in the tables accompanying the description of *Gymnoptychus trilophus* Cope on p. 476 of the Ann. Rpt. U. S. Geol. and Geog. Surv. Terr. in 1874. Reference to the type description of *Gymnoptychus nasutus* Cope in Pal. Bull. 16, p. 6, however, reveals that identical measurements appear for the lower jaw described by Cope under that title in 1873. Furthermore, in the same paper, the measurements accompanying the description of *Gymnoptychus trilophus* Cope are of a specimen with four cheek-teeth. This specimen has not been located in the type collection of the American Museum of Natural History.

Adjidaumo minimus (Matthew), *Adjidaumo minutus* (Cope), and *Adjidaumo douglassi* m. described above. A second and more progressive group includes species in which the cheek-teeth have higher crowns than those of the last assemblage, and in which the antero-external ridge is lacking from the inferior molars. In these species the pattern showing at the crown of unworn cheek-teeth is similar to that of *Adjidaumo*, although somewhat simpler, but there is the same



FIG. 5. *Paradjidaumo nasutus* (Cope). Referred specimen, C. M. No. 1033. P₄-M₂ left, $\times 10$. P₄ was not entirely erupted and has been lifted into place beside M₁.

arrangement of paired anterior and posterior transverse crests, and a median transverse crest extending across the central basin. The anterior and posterior valleys are shallow and crowded, however, and this pattern gives way at an early stage of wear to the familiar one of three transverse lophs. Apparently there is a tendency toward a more lophodont condition in this group, commensurate with the increased height of the crowns of the cheek-teeth, and this lophodont state is being brought about through the elimination of an earlier pattern similar to that of *Protadjidaumo* and *Adjidaumo*. For this group of species the generic name *Paradjidaumo* is proposed, the genus to include the species *Paradjidaumo minor* (Douglass) and *Paradjidaumo nasutus* (Cope). The characters of the genus indicate that it should be regarded as a separate phyletic line within the *Adjidaumidæ*, derived from a common ancestral stock with *Protadjidaumo* and *Adjidaumo*, but without known intermediate forms between it and the latter genera.